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For and on behalf of RWS Group Ltd

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Mascara comprising a tacky wax

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ABSTRACT

Mascara comprising a tacky wax

- 5 The invention relates to a mascara comprising, in a cosmetically acceptable medium, a wax having a tack of greater than or equal to 0.7 N.s and a hardness of less than or equal to 3.5 MPa.
- 10 The wax is in particular a C_{20} - C_{40} alkyl (hydroxystearoyloxy)stearate.

The present invention relates to a cosmetic mascara composition comprising a tacky wax. The invention also relates to a cosmetic makeup or treatment process for the eyelashes.

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The mascara composition may be a makeup composition, a composition to be applied onto a makeup, also known as a top coat, or a treating composition for the eyelashes.

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Mascaras are commonly prepared according to two types of formulation: water-based mascaras, known as cream mascaras, in the form of an emulsion of waxes in water; anhydrous mascaras or mascaras with a low water content, known as waterproof mascaras, in the form of dispersions of waxes in organic solvents.

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It is known practice to use various waxes to formulate mascaras, for instance those described in document WO-A-91/12793, for example beeswax, candelilla wax, carnauba wax or polyethylene wax.

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However, when the mascaras contain certain waxes such as carnauba wax, rice bran wax or polyethylene wax, the deposit of the eyelash makeup obtained looks grainy, thus giving a non-smooth and non-uniform makeup result, these defects rendering the makeup result unattractive.

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Moreover, to obtain a mascara with good charging properties, i.e. to obtain heavy makeup of the eyelashes, it is possible to incorporate into the mascara one or more waxes in a total content of greater than 25% by weight relative to the total weight of the mascara. However, on using conventional waxes such as beeswax, candelilla wax or carnauba wax at these high contents, the mascara composition acquires a very thick consistency, or even becomes too compact, and cannot be applied easily to the eyelashes with the mascara brush applicators commonly used. The excessively thick

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mascara is deposited on the eyelashes in the form of lumps and the makeup result thus obtained does not have the desired smooth appearance; the makeup result is not uniform and looks unattractive.

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In addition, certain waxes such as orange wax or lanolin wax, used at contents of greater than 25% by weight, produce compositions that are not sufficiently stable, especially after storage for two weeks at room temperature (25°C): the composition sets to a solid (substantial increase in viscosity) or undergoes a phase separation that may be seen with the naked eye. The composition is then unsuitable for application to the eyelashes.

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The aim of the present invention is to propose a mascara composition making it possible to obtain a uniform and smooth makeup result on the eyelashes.

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Another aim of the present invention is to provide a mascara that may be applied easily to the eyelashes and that may comprise a high content of wax and have good eyelash charging properties.

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Another aim of the invention is to obtain a mascara which is stable, especially after storage for 24 hours at 25°C.

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The inventors have discovered that such a composition may be obtained by using a particular wax that has tacky properties (high tack). This wax produces a mascara composition that applies easily to the eyelashes, shows good attachment to the eyelashes and leads to the formation of a smooth, uniform makeup result that does not look grainy.

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Furthermore, the tacky wax may be incorporated into the composition in a content that may be up to 50% by weight, relative to the total weight of the

composition, without the composition setting to a solid: the composition is stable (especially in terms of stability after 24 hours at 25°C), retains a creamy consistency and applies easily to the eyelashes.

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Moreover, the mascara makes it possible to achieve a good separation of the eyelashes: they do not stick together.

10 More specifically, one subject of the invention is a mascara composition comprising, in a physiologically acceptable medium, a wax having a tack of greater than or equal to 0.7 N.s and a hardness of less than or equal to 3.5 MPa.

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A subject of the invention is also a non-therapeutic cosmetic makeup or care process for the eyelashes, comprising the application to the eyelashes of a composition as defined above.

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A subject of the invention is also the use of a composition as defined above to obtain a uniform and/or smooth and/or thick makeup result on the eyelashes and/or good separation of the made-up eyelashes.

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A subject of the invention is also the use of a wax having a tack of greater than or equal to 0.7 N.s and a hardness of less than or equal to 3.5 MPa, in a mascara composition, to obtain a uniform and/or smooth and/or
30 thick makeup result on the eyelashes and/or to obtain a stable mascara and/or good separation of the made-up eyelashes.

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The term "cosmetically acceptable medium" means a cosmetic medium that is compatible with the eyelashes or the skin.

The wax present in the composition according to the invention has a tack of greater than or equal to

0.7 N.s, especially ranging from 0.7 N.s to 30 N.s, preferably greater than or equal to 1 N.s, especially ranging from 1 N.s to 20 N.s and preferentially greater than or equal to 2 N.s, especially ranging from 2 N.s to 10 N.s and more preferentially greater than or equal to 2 N.s, especially ranging from 2 N.s to 5 N.s.

The tacky wax has a hardness of less than or equal to 3.5 MPa, in particular ranging from 0.01 to 3.5 MPa, preferably ranging from 0.05 MPa to 3 MPa and more preferably ranging from 0.1 MPa to 2.5 MPa.

For the purposes of the present invention, the term "wax" means a lipophilic fatty compound that is solid at room temperature (25°C) and atmospheric pressure (760 mmHg, i.e. 10^5 Pa), with a reversible solid/liquid change of state, having a melting point of greater than 30°C and better still greater than 55°C, which may be up to 200°C and especially up to 120°C.

By bringing the wax to its melting point, it is possible to make it miscible with oils and to form a microscopically homogeneous mixture, but on cooling the mixture to room temperature, recrystallization of the wax in the oils of the mixture is obtained.

The melting point values correspond, according to the invention, to the melting peak measured using a differential scanning calorimeter (D.S.C.), for example the calorimeter sold under the name DSC 30 by the company Mettler, with a temperature rise of 5 or 10°C per minute.

The tack of the wax is measured at 20°C using the texturometer sold under the name TA-XT2i by the company Rheo, equipped with an acrylic polymer rotor in the form of a cone forming an angle of 45°, by measuring the change in force (compression force or stretching force) (F) as a function of time, during the following

operation:

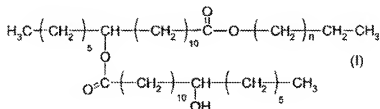
The rotor is displaced at a speed of 0.5 mm/s and then penetrates into the wax to a penetration depth of 2 mm. When the rotor has penetrated the wax to a depth of 2 mm, the rotor is held stationary for 1 second (corresponding to the relaxation time) and is then withdrawn at a speed of 0.5 mm/s. During the relaxation time, the force (compression force) decreases greatly until it becomes zero, and then, during the withdrawal of the rotor, the force (stretching force) becomes negative before rising again to the value 0. Tack corresponds to the integral of the curve of the force as a function of time for the portion of the curve corresponding to the negative force values (stretching force). The tack value is expressed in N.s.

To perform the tack measurement of the wax, the wax is melted at a temperature equal to the melting point of the wax +10°C. The molten wax is cast in a container 25 mm in diameter and 20 mm deep. The wax is recrystallized at room temperature (25°C) for 24 hours such that the surface of the wax is flat and smooth, and the wax is then kept for at least 1 hour at 20°C before performing the tack measurement.

The hardness of the wax is determined by measuring the compression force, which is measured at 20°C using the texturometer sold under the name TA-XT2i by the company Rheo, equipped with a stainless-steel cylinder 2 mm in diameter travelling at a measuring speed of 0.1 mm/s, and penetrating the wax to a penetration depth of 0.3 mm. To perform the hardness measurement, the wax is melted at a temperature equal to the melting point of the wax +20°C. The molten wax is cast in a container 30 mm in diameter and 20 mm deep. The wax is recrystallized at room temperature (25°C) for 24 hours and is then kept for at least 1 hour at 20°C before performing the hardness measurement. The hardness value

is the compression force measured divided by the area of the texturometer cylinder in contact with the wax.

- 5 Tacky waxes that may be used include the C₂₀-C₄₀ alkyl (hydroxystearyl)stearate (the alkyl group containing from 20 to 40 carbon atoms), alone or as a mixture, in particular a C₂₀-C₄₀ alkyl 12-(12'-hydroxystearyl)-stearate, of formula (I):



- 10 in which n is an integer ranging from 18 to 38, or a mixture of compounds of formula (I).

- Thus, a subject of the invention is also a mascara
15 composition comprising, in a physiologically acceptable medium, a C₂₀-C₄₀ alkyl (hydroxystearyl)stearate, in particular a C₂₀-C₄₀ alkyl 12-(12'-hydroxystearyl)stearate, especially of formula (I) as described above.

- 20 Such a wax is especially sold under the names "Kester Wax K 82 P" and "Kester Wax K 80 P" by the company Koster Keunen.

- 25 The tacky wax may be present in the mascara composition according to the invention in a content ranging from 0.5% to 60% by weight, in particular in a content greater than or equal to 0.5% and less than 25% by weight, preferably from 5% to 50% by weight and more
30 preferentially ranging from 10% to 40% by weight, relative to the total weight of the composition.

The physiologically acceptable medium of the mascara may comprise a volatile solvent chosen especially from

water and the volatile organic solvents and volatile oils defined below, and mixtures thereof.

5 The mascara composition according to the invention may comprise an aqueous medium, constituting an aqueous phase, which may form the continuous phase of the composition.

10 The aqueous phase may consist essentially of water: it may also comprise a mixture of water and of water-miscible solvent (water miscibility of greater than 50% by weight at 25°C), for instance lower monoalcohols containing from 1 to 5 carbon atoms, such as ethanol or isopropanol, glycols containing from 2 to 3 carbon
15 atoms, such as propylene glycol, ethylene glycol, 1,3-butylene glycol or dipropylene glycol, C₃-C₆ ketones and C₂-C₆ aldehydes.

20 The aqueous phase (water and optionally the water-miscible organic solvent) may be present in a content ranging from 1% to 95% by weight, preferably ranging from 3% to 80% by weight and preferentially ranging from 5% to 60% by weight, relative to the total weight of the composition.

25 The composition according to the invention may comprise an oil or organic solvent that may especially form a fatty phase, and in particular a continuous fatty phase. The composition may be an anhydrous composition.

30 For the purposes of the invention, the expression "volatile oil or organic solvent" means any non-aqueous medium which can evaporate on contact with the skin in less than one hour at room temperature and atmospheric
35 pressure. The volatile organic solvent(s) and the volatile oils of the invention are volatile cosmetic organic solvents and oils, that are liquid at room temperature, having a non-zero vapour pressure at room temperature and atmospheric pressure, ranging in

particular from 10^{-2} to 300 mmHg (1.33 Pa to 40 000 Pa) and preferably greater than 0.3 mmHg (30 Pa). The expression "non-volatile oil" means an oil which remains on the skin at room temperature and atmospheric pressure for at least several hours and which in particular has a vapour pressure of less than 10^{-2} mmHg (1.33 Pa).

These oils may be hydrocarbon-based oils, silicone oils, or mixtures thereof.

The expression "hydrocarbon-based oil" means an oil mainly containing hydrogen and carbon atoms and optionally oxygen, nitrogen, sulphur or phosphorus atoms. The volatile hydrocarbon-based oils may be chosen from hydrocarbon-based oils containing from 8 to 16 carbon atoms, and especially C_8-C_{16} branched alkanes, for instance C_8-C_{16} isoalkanes of petroleum origin (also known as isoparaffins), for instance isododecane (also known as 2,2,4,4,6-pentamethylheptane), isodecane and isohexadecane, and, for example, the oils sold under the trade names Isopars or Permetyls, C_8-C_{14} branched esters, isohexyl neopentanoate, and mixtures thereof. Other volatile hydrocarbon-based oils, for instance petroleum distillates, especially those sold under the name Shell Solt by the company Shell, may also be used. The volatile solvent is preferably chosen from hydrocarbon-based volatile oils containing from 8 to 16 carbon atoms, and mixtures thereof.

Volatile oils which may also be used are volatile silicones such as, for example, linear or cyclic volatile silicone oils, especially those with a viscosity ≤ 8 centistokes (8×10^{-6} m²/s) and especially containing from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups containing from 1 to 10 carbon atoms. As volatile silicone oils which may be used in the invention, mention may be made in particular of octamethylcyclotetrasiloxane,

decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane and dodecamethylpentasiloxane, and mixtures thereof.

The volatile oil may be present in the composition according to the invention in a content ranging from 0% to 98% by weight, relative to the total weight of the composition, preferably from 1% to 65% by weight.

The composition can also comprise at least one non-volatile oil chosen in particular from non-volatile hydrocarbon-based oils and/or silicone oils.

Non-volatile hydrocarbon-based oils which may be mentioned in particular are:

- hydrocarbon-based plant oils such as triglycerides consisting of fatty acid esters and of glycerol in which the fatty acids may have varied chain lengths from C_4 to C_{24} , these chains possibly being linear or branched, and saturated or unsaturated; these oils are, in particular, wheat germ oil, sunflower oil, grape seed oil, sesame oil, corn oil, apricot oil, castor oil, karite butter, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cotton oil, hazelnut oil, macadamia oil, jojoba oil, alfalfa oil, poppy oil, pumpkin oil, marrow oil, blackcurrant seed oil, evening primrose oil, millet oil, barley oil, quinoa oil, rye oil, safflower oil, candlenut oil, passion flower oil and musk rose oil; or alternatively caprylic/capric acid triglycerides such as those sold by Stearineries Dubois or those sold under the names Miglyol 810, 812 and 818 by Dynamit Nobel;
- synthetic ethers containing from 10 to 40 carbon atoms;
- linear or branched hydrocarbons of mineral or synthetic origin, such as petroleum jelly, polydecenes, hydrogenated polyisobutene such as parleam, and

squalane, and mixtures thereof;

- synthetic esters such as oils of formula R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue containing from 1 to 40 carbon atoms and R_2 represents an in particular branched hydrocarbon-based chain containing from 1 to 40 carbon atoms, on condition that $R_3 + R_4 \geq 10$, such as, for example, purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, C_{12} - C_{15} alkyl benzoate, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, isostearyl isostearate, alkyl or polyalkyl octanoates, decanoates or ricinoleates such as propylene glycol dioctanoate; hydroxylated esters such as isostearyl lactate and diisostearyl malate; and pentaerythritol esters;
- fatty alcohols that are liquid at room temperature, containing a branched and/or unsaturated carbon-based chain containing from 12 to 26 carbon atoms, for instance octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol or 2-undecylpentadecanol;
- higher fatty acids such as oleic acid, linoleic acid or linolenic acid;
- and mixtures thereof.

- 25 The non-volatile silicone oils which may be used in the composition according to the invention may be non-volatile polydimethylsiloxanes (PDMSs), polydimethylsiloxanes comprising alkyl or alkoxy groups, that are pendent and/or at the end of a silicone chain, the groups each containing from 2 to 24 carbon atoms, phenylsilicones, for instance phenyltrimethicones, phenyldimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyldimethicones, diphenylmethyl-
- 30 diphenyltrisiloxanes and 2-phenylethyl trimethylsiloxysilicates.
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The non-volatile oils may be present in the composition according to the invention in a content ranging from 0

to 30% (especially from 0.1% to 30%) by weight, preferably from 0 to 20% by weight (especially 0.1% to 20%) and better still from 0 to 10% by weight (especially 0.1% to 10%), relative to the total weight
5 of the composition.

The composition according to the invention may also comprise an additional wax other than the tacky wax described above.

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The additional wax may be chosen, for example, from beeswax, paraffin waxes, hydrogenated castor oil and silicone waxes.

15 The waxes (the tacky wax and/or the additional waxes) that are present in the composition may be dispersed in the form of particles in an aqueous medium. In particular, the wax may be present in the form of a wax-in-water emulsion.

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The additional wax may be present in the composition according to the invention in a content ranging from 0.1% to 50% by weight, relative to the total weight of the composition, preferably from 0.5% to 30% by weight
25 and better still from 1% to 20% by weight.

The composition according to the invention may contain at least one fatty compound that is pasty at room temperature. For the purposes of the invention, the
30 expression "pasty fatty substance" means fatty substances with a melting point ranging from 20 to 55°C, preferably 25 to 45°C, and/or a viscosity at 40°C ranging from 0.1 to 40 Pa.s (1 to 400 poises), preferably 0.5 to 25 Pa.s, measured using a Contraves
35 TV or Rheomat 80 viscometer, equipped with a spindle rotating at 60 Hz. A person skilled in the art can select the spindle for measuring the viscosity from the spindles MS-r3 and MS-r4, on the basis of his general knowledge, so as to be able to carry out the

measurement of the pasty compound tested.

These fatty substances are preferably hydrocarbon-based compounds, optionally of polymeric type; they can also
5 be chosen from silicone compounds; they may also be in the form of a mixture of hydrocarbon-based compounds and/or silicone compounds. In the case of a mixture of different pasty fatty substances, the hydrocarbon-based pasty compounds (containing mainly hydrogen and carbon
10 atoms and optionally ester groups) are preferably used in major proportion.

Among the pasty compounds which may be used in the composition according to the invention, mention may be
15 made of lanolins and lanolin derivatives such as acetylated lanolins or oxypropylenated lanolins or isopropyl lanolate, having a viscosity of from 18 to 21 Pa.s, preferably 19 to 20.5 Pa.s, and/or a melting point of from 30 to 55°C, and mixtures thereof. It is
20 also possible to use esters of fatty acids or of fatty alcohols, in particular those containing from 20 to 65 carbon atoms (melting point of about from 20 to 35°C and/or viscosity at 40°C ranging from 0.1 to 40 Pa.s), such as triisostearyl or cetyl citrate; arachidyl
25 propionate; polyvinyl laurate; cholesterol esters, such as triglycerides of plant origin, such as hydrogenated plant oils, viscous polyesters such as poly(12-hydroxystearic acid), and mixtures thereof.

30 Mention may also be made of pasty silicone fatty substances such as polydimethylsiloxanes (PDMSs) containing pendent chains of the alkyl or alkoxy type containing from 8 to 24 carbon atoms, and having a melting point of 20-55°C, such as stearyldimethicones,
35 in particular those sold by Dow Corning under the trade names DC2503 and DC25514, and mixtures thereof.

The pasty fatty substance may be present in the composition according to the invention in a proportion

of from 0.01% to 60% by weight, relative to the total weight of the composition, preferably in a proportion of from 0.5% to 45% by weight, and better still ranging from 2% to 30% by weight, in the composition.

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The composition according to the invention can contain emulsifying surfactants, present in particular in a proportion ranging from 2% to 30% by weight relative to the total weight of the composition, and better still
10 from 5% to 15%. These surfactants may be chosen from anionic and nonionic surfactants. Reference may be made to the document "Encyclopedia of Chemical Technology, Kirk-Othmer", volume 22, pp. 333-432, 3rd edition, 1979, Wiley, for the definition of the properties and
15 functions (emulsifying) of surfactants, in particular pp. 347-377 of the said reference, for the anionic and nonionic surfactants.

The surfactants preferably used in the composition according to the invention are chosen from:

20 - nonionic surfactants: fatty acids, fatty alcohols, polyethoxylated or polyglycerolated fatty alcohols such as polyethoxylated stearyl or cetylstearyl alcohol, fatty acid esters of sucrose, alkylglucose esters, in
25 particular polyoxyethylenated fatty esters of C_1-C_6 alkyl glucose, and mixtures thereof;

- anionic surfactants: $C_{16}-C_{36}$ fatty acids neutralized with amines, aqueous ammonia or alkaline salts, and mixtures thereof.

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Surfactants which make it possible to obtain an oil-in-water or wax-in-water emulsion are preferably used.

The composition according to the invention can comprise
35 at least one film-forming polymer.

The film-forming polymer may be present in the composition according to the invention in a solids content ranging from 0.1% to 60% by weight relative to

the total weight of the composition, preferably from 0.5% to 40% by weight and better still from 1% to 30% by weight.

5 In the present application, the expression "film-forming polymer" means a polymer which is capable, by itself or in the presence of an auxiliary film-forming agent, of forming a continuous and adherent film on a support, in particular on keratin materials such as the
10 eyelashes.

Among the film-forming polymers which may be used in the composition of the present invention, mention may be made of synthetic polymers, of radical-mediated type
15 or of polycondensate type, and polymers of natural origin, and mixtures thereof.

The expression "radical-mediated film-forming polymer" means a polymer obtained by polymerization of monomers
20 containing unsaturation, in particular ethylenic unsaturation, each monomer being capable of homopolymerizing (unlike polycondensates).

The film-forming polymers of radical-mediated type may
25 be, in particular, vinyl polymers or copolymers, in particular acrylic polymers.

The vinyl film-forming polymers can result from the polymerization of monomers containing ethylenic
30 unsaturation and containing at least one acidic group and/or esters of these acidic monomers and/or amides of these acidic monomers.

Monomers bearing an acidic group which may be used are
35 α,β -ethylenic unsaturated carboxylic acids such as acrylic acid, methacrylic acid, crotonic acid, maleic acid or itaconic acid. (Meth)acrylic acid and crotonic acid are preferably used, and more preferably (meth)acrylic acid.

The esters of acidic monomers are advantageously chosen from (meth)acrylic acid esters (also known as (meth)acrylates), especially (meth)acrylates of an alkyl, in particular of a C_1 - C_{30} and preferably C_1 - C_{20} alkyl, (meth)acrylates of an aryl, in particular of a C_6 - C_{10} aryl, and (meth)acrylates of a hydroxyalkyl, in particular of a C_2 - C_6 hydroxyalkyl.

10 Among the alkyl (meth)acrylates which may be mentioned are methyl methacrylate, ethyl methacrylate, butyl methacrylate, isobutyl methacrylate, 2-ethylhexyl methacrylate, lauryl methacrylate and cyclohexyl methacrylate.

15 Among the hydroxyalkyl (meth)acrylates which may be mentioned are hydroxyethyl acrylate, 2-hydroxypropyl acrylate, hydroxyethyl methacrylate and 2-hydroxypropyl methacrylate.

20 Among the aryl (meth)acrylates which may be mentioned are benzyl acrylate and phenyl acrylate.

The (meth)acrylic acid esters that are particularly preferred are the alkyl (meth)acrylates.

According to the present invention, the alkyl group of the esters may be either fluorinated or perfluorinated, i.e. some or all of the hydrogen atoms of the alkyl group are substituted with fluorine atoms.

30 Examples of amides of the acid monomers that may be mentioned are (meth)acrylamides, and especially N-alkyl(meth)acrylamides, in particular of a C_2 - C_{12} alkyl. Among the N-alkyl(meth)acrylamides which may be mentioned are N-ethylacrylamide, N-t-butylacrylamide, N-t-octylacrylamide and N-undecylacrylamide.

The vinyl film-forming polymers may also result from

the homopolymerization or copolymerization of monomers chosen from vinyl esters and styrene monomers. In particular, these monomers may be polymerized with acid monomers and/or esters thereof and/or amides thereof, such as those mentioned above.

Examples of vinyl esters that may be mentioned are vinyl acetate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate and vinyl t-butylbenzoate.

Styrene monomers that may be mentioned are styrene and α -methylstyrene.

Among the film-forming polycondensates that may be mentioned are polyurethanes, polyesters, polyesteramides, polyamides, epoxyester resins and polyureas.

The polyurethanes may be chosen from anionic, cationic, nonionic and amphoteric polyurethanes, polyurethane-acrylics, polyurethane-polyvinylpyrrolidones, polyester-polyurethanes, polyether-polyurethanes, polyureas and polyurea/polyurethanes, and mixtures thereof.

The polyesters may be obtained, in a known manner, by polycondensation of dicarboxylic acids with polyols, in particular diols.

The dicarboxylic acid may be aliphatic, alicyclic or aromatic. Examples of such acids that may be mentioned are: oxalic acid, malonic acid, dimethylmalonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethylglutaric acid, azelaic acid, suberic acid, sebacic acid, fumaric acid, maleic acid, itaconic acid, phthalic acid, dodecanedioic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, isophthalic acid, terephthalic acid, 2,5-norbornanedicarboxylic acid, diglycolic acid,

thiodipropionic acid, 2,5-naphthalenedicarboxylic acid or 2,6-naphthalenedicarboxylic acid. These dicarboxylic acid monomers may be used alone or as a combination of at least two dicarboxylic acid monomers. Among these
5 monomers, the ones preferentially chosen are phthalic acid, isophthalic acid and terephthalic acid.

The diol may be chosen from aliphatic, alicyclic and aromatic diols. The diol used is preferably chosen
10 from: ethylene glycol, diethylene glycol, triethylene glycol, 1,3-propanediol, cyclohexanedimethanol and 4-butanediol. Other polyols that may be used are glycerol, pentaerythritol, sorbitol and trimethylolpropane.

15 The polyesteramides may be obtained in a manner analogous to that of the polyesters, by polycondensation of diacids with diamines or amino alcohols. Diamines which may be used are
20 ethylenediamine, hexamethylenediamine and meta- or para-phenylenediamine. An amino alcohol which may be used is monoethanolamine.

The polyester may also comprise at least one monomer
25 bearing at least one group $-SO_3M$, with M representing a hydrogen atom, an ammonium ion NH_4^+ or a metal ion such as, for example, an Na^+ , Li^+ , K^+ , Mg^{2+} , Ca^{2+} , Cu^{2+} , Fe^{2+} or Fe^{3+} ion. A difunctional aromatic monomer comprising such a group $-SO_3M$ may be used in particular.

30 The aromatic nucleus of the difunctional aromatic monomer also bearing a group $-SO_3M$ as described above may be chosen, for example, from benzene, naphthalene, anthracene, biphenyl, oxybiphenyl, sulphonylbiphenyl
35 and methylenebiphenyl nuclei. As examples of difunctional aromatic monomers also bearing a group $-SO_3M$, mention may be made of: sulphoisophthalic acid, sulphoterephthalic acid, sulphophthalic acid, 4-sulphonaphthalene-2,7-dicarboxylic acid.

The copolymers preferably used are those based on isophthalate/sulphoisophthalate, and more particularly copolymers obtained by condensation of diethylene glycol, cyclohexanedimethanol, isophthalic acid and sulphoisophthalic acid.

The polymers of natural origin, optionally modified, may be chosen from shellac resin, sandarac gum, dammar resins, elemi gums, copal resins and cellulose polymers, and mixtures thereof.

According to a first embodiment of the composition according to the invention, the film-forming polymer may be a water-soluble polymer and may be present in an aqueous phase of the composition; the polymer is thus solubilized in the aqueous phase of the composition. Examples of water-soluble film-forming polymers which may be mentioned are:

- proteins, for instance proteins of plant origin such as wheat proteins and soybean proteins; proteins of animal origin such as keratins, for example keratin hydrolysates and sulphonc keratins;
- polymers of celluloses such as hydroxyethylcellulose, hydroxypropylcellulose, methylcellulose, ethylhydroxyethylcellulose and carboxymethylcellulose, and quaternized cellulose derivatives;
- acrylic polymers or copolymers, such as polyacrylates or polymethacrylates;
- vinyl polymers, for instance polyvinylpyrrolidones, copolymers of methyl vinyl ether and of malic anhydride, the copolymer of vinyl acetate and of crotonic acid, copolymers of vinylpyrrolidone and of vinyl acetate; copolymers of vinylpyrrolidone and of caprolactam; polyvinyl alcohol;
- polymers of natural origin, which are optionally modified, such as:
 - gum arabics, guar gum, xanthan derivatives, karaya gum;

- alginates and carrageenans;
- glycoaminoglycans, hyaluronic acid and derivatives thereof;
- shellac resin, sandarac gum, dammar resins, elemi gums and copal resins;
- deoxyribonucleic acid;
- mucopolysaccharides such as chondroitin sulphate, and mixtures thereof.

10 According to another embodiment of the composition according to the invention, the film-forming polymer may be present in a liquid fatty phase comprising organic solvents or oils such as those described above (the film-forming polymer is thus said to be a
15 liposoluble polymer). For the purposes of the invention, the expression "liquid fatty phase" means a fatty phase which is liquid at room temperature (25°C) and atmospheric pressure (760 mmHg, i.e. 10^5 Pa), composed of one or more fatty substances that are
20 liquid at room temperature, also known as oils, which are generally mutually compatible.

The liquid fatty phase preferably comprises a volatile oil, optionally mixed with a non-volatile oil, the oils
25 possibly being chosen from those mentioned above.

Examples of liposoluble polymers which may be mentioned are copolymers of vinyl ester (the vinyl group being directly linked to the oxygen atom of the ester group and the vinyl ester containing a saturated, linear or
30 branched hydrocarbon-based radical of 1 to 19 carbon atoms, linked to the carbonyl of the ester group) and of at least one other monomer which may be a vinyl ester (other than the vinyl ester already present), an
35 α -olefin (containing from 8 to 28 carbon atoms), an alkyl vinyl ether (in which the alkyl group comprises from 2 to 18 carbon atoms) or an allylic or methallylic ester (containing a saturated, linear or branched hydrocarbon-based radical of 1 to 19 carbon atoms,

linked to the carbonyl of the ester group).

These copolymers may be crosslinked with the aid of crosslinking agents, the aim of which is to which may
5 be either of the vinyl type or of the allylic or methallylic type, such as tetraallyloxyethane, divinylbenzene, divinyl octanedioate, divinyl dodecanedioate and divinyl octadecanedioate.

10 Examples of these copolymers which may be mentioned are the following copolymers: vinyl acetate/allyl stearate, vinyl acetate/vinyl laurate, vinyl acetate/vinyl stearate, vinyl acetate/octadecene, vinyl acetate/octadecyl vinyl ether, vinyl propionate/allyl
15 laurate, vinyl propionate/vinyl laurate, vinyl stearate/1-octadecene, vinyl acetate/1-dodecene, vinyl stearate/ethyl vinyl ether, vinyl propionate/cetyl vinyl ether, vinyl stearate/allyl acetate, vinyl 2,2-dimethyloctanoate/vinyl laurate, allyl
20 2,2-dimethylpentanoate/vinyl laurate, vinyl dimethylpropionate/vinyl stearate, allyl dimethylpropionate/vinyl stearate, vinyl propionate/vinyl stearate, crosslinked with 0.2% divinylbenzene, vinyl dimethylpropionate/vinyl laurate, crosslinked
25 with 0.2% divinylbenzene, vinyl acetate/octadecyl vinyl ether, crosslinked with 0.2% tetraallyloxyethane, vinyl acetate/allyl stearate, crosslinked with 0.2% divinylbenzene, vinyl acetate/1-octadecene, crosslinked with 0.2% divinylbenzene, and allyl propionate/allyl
30 stearate, crosslinked with 0.2% divinylbenzene.

Examples of liposoluble film-forming polymers which may also be mentioned are liposoluble homopolymers, and in particular those resulting from the homopolymerization
35 of vinyl esters containing from 9 to 22 carbon atoms or of alkyl acrylates or methacrylates, and alkyl radicals containing from 10 to 20 carbon atoms.

Such liposoluble homopolymers may be chosen from

polyvinyl stearate, polyvinyl stearate crosslinked with divinylbenzene, with diallyl ether or with diallyl phthalate, polystearyl (meth)acrylate, polyvinyl laurate and polylauryl (meth)acrylate, it being
5 possible for these poly(meth)acrylates to be crosslinked with the aid of ethylene glycol dimethacrylate or tetraethylene glycol dimethacrylate.

The liposoluble copolymers and homopolymers defined
10 above are known and are described in particular in patent application FR-A-2 232 303; they may have a weight-average molecular weight ranging from 2 000 to 500 000 and preferably from 4 000 to 200 000.

15 As liposoluble film-forming polymers which may be used in the invention, mention may also be made of polyalkylenes and in particular copolymers of C_2 - C_{20} alkenes, such as polybutene, alkylcelluloses with a linear or branched, saturated or unsaturated
20 C_1 - C_8 alkyl radical, for instance ethylcellulose and propylcellulose, copolymers of vinylpyrrolidone (VP) and in particular copolymers of vinylpyrrolidone and of C_2 to C_{10} and better still C_3 to C_{20} alkene. As examples of VP copolymers which may be used in the invention,
25 mention may be made of the copolymers of VP/vinyl acetate, VP/ethyl methacrylate, butylated polyvinylpyrrolidone (EVP), VP/ethyl methacrylate/methacrylic acid, VP/eicosene, VP/hexadecene, VP/triacontene, VP/styrene or VP/acrylic acid/lauryl
30 methacrylate.

The composition according to the invention may comprise a plasticizer, which promotes the formation of a film with the film-forming polymer. Such a plasticizer may
35 be chosen from any of the compounds known to those skilled in the art as being capable of satisfying the desired function.

The composition according to the invention may also

comprise a dyestuff, for instance pulverulent dyestuffs, liposoluble dyes and water-soluble dyes. This dyestuff may be present in a content ranging from 0.01% to 30% by weight relative to the total weight of the composition.

The pulverulent dyestuffs may be chosen from pigments and nacres.

10 The pigments may be white or coloured, mineral and/or organic, and coated or uncoated. Among the mineral pigments which may be mentioned are titanium dioxide, optionally surface-treated, zirconium oxide, zinc oxide or cerium oxide, as well as iron oxide, chromium oxide, 15 manganese violet, ultramarine blue, chromium hydrate and ferric blue. Among the organic pigments which may be mentioned are carbon black, pigments of D & C type, and lakes based on cochineal carmine or on barium, strontium, calcium or aluminium.

20 The nacres may be chosen from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica with iron oxides, titanium mica with, in 25 particular, ferric blue or chromium oxide, titanium mica with an organic pigment of the abovementioned type, and nacreous pigments based on bismuth oxychloride.

30 The liposoluble dyes are, for example, Sudan Red, D&C Red 17, D&C Green 6, β -carotene, soybean oil, Sudan Brown, D&C Yellow 11, D&C Violet 2, D&C Orange 5, quinoline yellow and annatto. The water-soluble dyes are, for example, beetroot juice, methylene blue, the 35 disodium salt of ponceau, the disodium salt of alizarin green, quinoline yellow, the trisodium salt of amaranthus, the disodium salt of tartrazine, the monosodium salt of rhodamine, the disodium salt of Fuchsin, and xanthophyll.

The composition of the invention may also comprise any additive usually used in cosmetics, such as antioxidants, fillers, preserving agents, fragrances, neutralizers, thickeners and vitamins, and mixtures thereof.

According to one particular embodiment of the invention, the composition contains no UV-screening agent (organic screening agent or mineral screening agent; screening agent that absorbs or reflects ultraviolet radiation).

Needless to say, a person skilled in the art will take care to select the optional additional additives and/or the amount thereof such that the advantageous properties of the composition according to the invention are not, or are not substantially, adversely affected by the addition envisaged.

The composition according to the invention may be manufactured by the known processes generally used in cosmetics.

The invention is illustrated in greater detail in the examples that follow.

Examples 1 to 6:

An anhydrous mascara according to the invention (Example 1) and 5 mascaras not forming part of the invention (Examples 2 to 6) having the composition below were prepared, using 6 different waxes:

- wax	27 g
- bentonite	5.3 g
- propylene carbonate	1.7 g
- vinyl acetate/allyl stearate copolymer (65/35) (Mexomer EQ from Chimex)	2.2 g
- polyvinyl laurate (Mexomer PP from Chimex)	0.7 g

- silica	0.8 g
- pigments	3.6 g
- preserving agents	qs
- isododecane	qs 100 g

5

For each composition, the viscosity and the consistency index were measured, and the stability at 25°C was evaluated.

- 10 The viscosity measurement was performed at 25°C using a Rheomat RM 180 viscometer equipped with a No. 4 spindle, the measurement being performed after rotation of the spindle for 10 minutes (after which time stabilization of the viscosity and of the rotation
15 speed of the spindle are observed), at a shear rate of 200 s⁻¹.

The consistency index measurement is performed using a TA-XT2i texturometer from the company Rheo, equipped
20 with a stainless-steel cylindrical probe 12 mm in diameter.

A cylindrical container (35 mm in diameter and 15 mm deep) was filled with the mascara composition to be
25 tested and the surface of the product contained in the container was then levelled off to obtain a totally flat surface of the product. The cylindrical probe of the texturometer was displaced at a speed of 10 mm.s⁻¹ and then penetrated the mascara contained in the
30 cylindrical container, to a depth of 0.2 mm. The force exerted by the mascara on the probe was then measured, this force corresponding to the consistency index of the mascara, expressed in Pa.

- 35 The stability was evaluated by visual observation of the composition after storage for two weeks at 25°C.

The tack and the hardness of the wax were measured according to the measuring method described previously

in the description.

The following results were obtained:

Example	Wax	Tack (N.s)	Hardness (MPa)	Viscosity (Pa.s)	Consistency (Pa)	Stability
1	Koster K 82 P	3.38	0.96	3.6	560	Yes
2	Beeswax	2.02	3.68	5.9	1 842	Yes
3	Hydrogen- ated jojoba oil	0.18	8.62	12.8	1 991	Yes
4	Hydrogen- ated castor oil	0.08	2.77	Too thick	22 942	-
5	Orange oil ⁽¹⁾	0.09	0.09	< 1	Too fluid	No 2 phases
6	Oxypropyl- enated (5 PO) lanolin wax ⁽²⁾	0.14	0.06	< 1	Too fluid	No 2 phases

5

- (1) sold by the company Koster Keunen
(2) Emery 1695 from the company Cognis

10 It was found that composition 1 according to the
invention was stable and had the lowest viscosity and
the lowest consistency. Compositions 2 and 3, although
stable, had a higher viscosity and a higher consistency
than those of composition 1. Composition 4 was too
15 thick and is therefore unsuitable for application to
the eyelashes using a mascara brush.

Compositions 5 and 6 were not stable: they showed 2
phases after two weeks of storage at 25°C.

Example 7:

A wax-in-water emulsion mascara having the composition below was prepared:

5	- tacky wax (Kester Wax K 82 P from the company Koster Keunen)	28	g
	- 2-amino-2-methyl-1,3-propanediol	0.5	g
	- triethanolamine	2.4	g
	- stearic acid	5.8	g
	- water-soluble nonionic polymers	4.3	g
10	- sodium polymethacrylate (Darvan 7 from the company Vanderbilt)	0.25	g AM
	- hydroxyethylcellulose crosslinked with epichlorohydrin, quaternized with trimethylamine (JR 400 from the company Union Carbide)	0.1	g
15	- pigments	5.4	g
	- preserving agents	qs	
	- water	qs	100 g

20 This mascara is stable after 24 hours at room temperature. It applies easily and adheres well to the eyelashes. The mascara forms a smooth, uniform makeup and thickens the eyelashes.

25 **Example 8:**

An anhydrous mascara having the composition below was prepared:

30	- tacky wax (Kester Wax K 82 P from the company Koster Keunen)	27	g
	- bentonite	5.3	g
	- propylene carbonate	1.7	g
	- vinyl acetate/allyl stearate copolymer (65/35) (Mexomer PQ from Chimex)	2.2	g
35	- polyvinyl laurate (Mexomer PP from Chimex)	0.7	g
	- stearate of the oligomer of 12-hydroxy-stearic acid (Solsperse 21000 from Avecia)	0.1	g
	- silica	0.8	g
	- pigments	4.2	g

- | | | |
|---------------------|----|-------|
| - preserving agents | qs | |
| - isododecane | qs | 100 g |

This waterproof mascara adheres well to the eyelashes.

- 5 It gives the eyelashes a highly separating, smooth,
uniform makeup.

Example 9:

- | | | | |
|----|---|-----|-------|
| 10 | An anhydrous mascara having the composition below was prepared: | | |
| | - tacky wax (Kester Wax K 82 P from the company Koster Keunen) | 35 | g |
| | - bentonite | 5.3 | g |
| 15 | - propylene carbonate | 1.7 | g |
| | - vinyl acetate/allyl stearate copolymer (65/35) (Mexomer PQ from Chimex) | 2.2 | g |
| | - polyvinyl laurate (Mexomer PP from Chimex) | 0.7 | g |
| | - stearate of the oligomer of 12-hydroxy-stearic acid (Solsperse 21000 from Avecia) | 0.1 | g |
| 20 | - silica | 0.8 | g |
| | - pigments | 4.2 | g |
| | - preserving agents | qs | |
| | - isododecane | qs | 100 g |

This waterproof mascara adheres well to the eyelashes. It gives the eyelashes a highly separating, smooth, uniform makeup result.

30 Example 10:

A wax-in-water emulsion mascara having the composition below was prepared:

- | | | |
|----|---|-------|
| 35 | - tacky wax (Kester Wax K 82 P from the
company Koster Keunen) | 15 g |
| | - beeswax | 10 g |
| | - 2-amino-2-methyl-1,3-propanediol | 0.5 g |
| | - triethanolamine | 2.4 g |
| | - stearic acid | 5.8 g |

	- water-soluble nonionic polymers	4.3	g
	- sodium polymethacrylate (Darvan 7 from the company Vanderbilt)	0.25	g AM
5	- hydroxyethylcellulose crosslinked with epichlorohydrin, quaternized with trimethylamine (JR 400 from the company Union Carbide)	0.1	g
	- pigments	5.4	g
	- preserving agents	qs	
10	- water	qs	100 g

This mascara adheres well to the eyelashes. The makeup is smooth and uniform.

15 **Example 11:**

A wax-in-water emulsion mascara having the composition below was prepared:

	- tacky wax (Kester Wax K 82 P from the company Koster Keunen)	10	g
20	- beeswax	5	g
	- 2-amino-2-methyl-1,3-propanediol	0.5	g
	- triethanolamine	2.4	g
	- stearic acid	5.8	g
25	- water-soluble nonionic polymers	4.3	g
	- sodium polymethacrylate (Darvan 7 from the company Vanderbilt)	0.25	g AM
	- hydroxyethylcellulose crosslinked with epichlorohydrin, quaternized with trimethylamine (JR 400 from the company Union Carbide)	0.1	g
30	- pigments	5.4	g
	- preserving agents	qs	
	- water	qs	100 g

35

This mascara applies easily to the eyelashes and the makeup on the eyelashes is smooth and uniform.

CLAIMS

1. Mascara comprising, in a cosmetically acceptable medium, a wax having a tack of greater than or equal to
5 0.7 N.s and a hardness of less than or equal to 3.5 MPa.
2. Mascara according to Claim 1, characterized in that the wax has a tack ranging from 0.7 N.s to 30 N.s.
10
3. Mascara according to Claim 1 or 2, characterized in that the wax has a tack of greater than or equal to 1 N.s and preferably ranging from 1 N.s to 20 N.s.
- 15 4. Mascara according to any one of the preceding claims, characterized in that the wax has a tack of greater than or equal to 2 N.s and preferably ranging from 2 N.s to 10 N.s.
- 20 5. Mascara according to any one of the preceding claims, characterized in that the wax has a hardness ranging from 0.01 to 3.5 MPa.
6. Mascara according to any one of the preceding
25 claims, characterized in that the wax has a hardness ranging from 0.05 MPa to 3 MPa and preferably ranging from 0.1 MPa to 2.5 MPa.
7. Mascara according to any one of the preceding
30 claims, characterized in that the wax is a C₂₅-C₄₀ alkyl (hydroxystearoyloxy)stearate.
8. Mascara according to any one of the preceding claims, characterized in that the wax is present in a
35 content ranging from 0.5% to 60% by weight, preferably ranging from 5% to 50% by weight and preferentially ranging from 10% to 40% by weight, relative to the total weight of the composition.

15. Mascara according to Claim 39 or 40, characterized in that the aqueous phase is present in a content ranging from 1% to 95% by weight, preferably ranging from 3% to 80% by weight and preferentially ranging from 5% to 60% by weight, relative to the total weight of the composition.

16. Mascara according to any one of the preceding claims, characterized in that it comprises a volatile oil.

17. Mascara according to the preceding claim, characterized in that the volatile oil is chosen from hydrocarbon-based oils and silicone oils, or mixtures thereof.

18. Mascara according to either of Claims 16 and 17, characterized in that the volatile oil is present in a content ranging from 0.1% to 98% by weight and preferably ranging from 1% to 65% by weight relative to the total weight of the composition.

19. Mascara according to any one of the preceding claims, characterized in that it comprises a non-volatile oil.

20. Mascara according to the preceding claim, characterized in that the non-volatile oil is present in a content ranging from 0.1% to 30% by weight, preferably from 0.1% to 20% by weight and better still from 0.1% to 10% by weight, relative to the total weight of the composition.

21. Mascara according to any one of the preceding claims, characterized in that it comprises a film-forming polymer.

22. Mascara according to Claim 21 and one of Claims 12 to 15, characterized in that the film-forming polymer

is dissolved in the aqueous phase.

23. Mascara according to Claim 21 and one of Claims 16
to 20, characterized in that the film-forming polymer
5 is dissolved in a liquid fatty phase.

24. Mascara according to any one of Claims 21 to 23,
characterized in that the film-forming polymer is
present in a solids content ranging from 0.1% to 60% by
10 weight, preferably ranging from 0.5% to 40% by weight
and preferentially ranging from 1% to 30% by weight,
relative to the total weight of the composition.

25. Mascara according to any one of the preceding
15 claims, characterized in that it comprises an
additional wax.

26. Mascara according to the preceding claim,
characterized in that the additional wax is present in
20 the mascara in a content ranging from 0.1% to 35% by
weight, preferably from 0.1% to 20% by weight and
better still from 1% to 10% by weight, relative to the
total weight of the composition.

27. Mascara according to any one of the preceding
25 claims, characterized in that it comprises a
surfactant.

28. Mascara according to any one of the preceding
30 claims, characterized in that it comprises an additive
chosen from dyestuffs, antioxidants, fillers, pasty
fatty substances, preserving agents, fragrances,
neutralizers, thickeners, vitamins, coalescence agents
and plasticizers, and mixtures thereof.

29. Mascara according to any one of the preceding
35 claims, characterized in that the composition contains
no UV-screening agent.

Translator's Report/Comments

Your ref: FR 02 11104

Your order of (date): 20/07/2010

In translating the above text we have noted the following apparent errors/unclear passages which we have reproduced:

Page/para/line*	Comment
13/40	"qui ont pour but". Text needs deleting.
22/19	"Selon l'une des revendications 39 ou 40". Does not make sense in context of claim 15.

* This identification refers to the source text. Please note that the first paragraph is taken to be, where relevant, the end portion of a paragraph starting on the preceding page. Where the paragraph is stated, the line number relates to the particular paragraph. Where no paragraph is stated, the line number refers to the page margin line number.